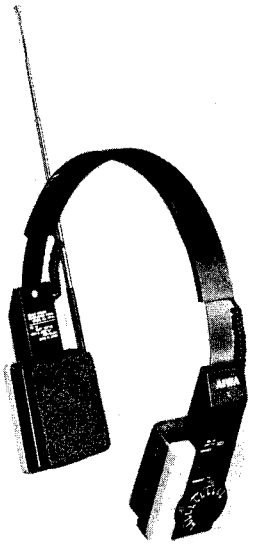
SERVICE MANUAL

MODEL NO.

STEREO FM/AM RADIO HEADPHONE

HR-S01



Code No. 43-100-000-34

TYPE. Y

DATE OF ISSUE 6/ 1982

SPECIFICATIONS

≪ GENERAL ≫

Semiconductors: 3 ICs, 1 transistor, 2 diodes, 1 LED
Weight: 165g (batteries included) (0.36 lbs.)
Power supply: DC 3V (SUM-3X2)
Battery life under continuous use:
FM Approx. 20 hours
AM Approx. 40 hours
(When SUM-3 batteries are used)
Input/output terminals: Input/output: 3.5φ jack
Accessories: Connection cord x 1
FM antenna x 1

≪ Radio section ≫

Frequency ranges: FM 87.4 ~ 108.3 MHz
AM 520 ~ 1650 kHz
IHF sensitivity: (THD 3%) 22 ± 5 dB (at 88, 100, 108 MHz)
Sensitivity: 52 ± 5 dB (at 600 kHz)
46 ± 5 dB (at 1000, 1440 kHz)
Intermediate frequency: FM 10.7 ± 0.1 MHz
AM 468 ± 4 kHz
Image frequency interference ratio:
FM More than 15 dB (at 108 MHz)
AM More than 25 dB (at 1440 kHz)
Intermediate frequency interference ratio:
FM More than 50 dB (at 88 MHz)
AM More than 20 dB (at 600 kHz)
Separation: 20 ± 4 dB (at 1 kHz)
Antennas: FM Whip antenna
Wire antenna
AM Ferrite bar antenna
Output: 40mW (20mW + 20mW)

≪ Headphone section ≫

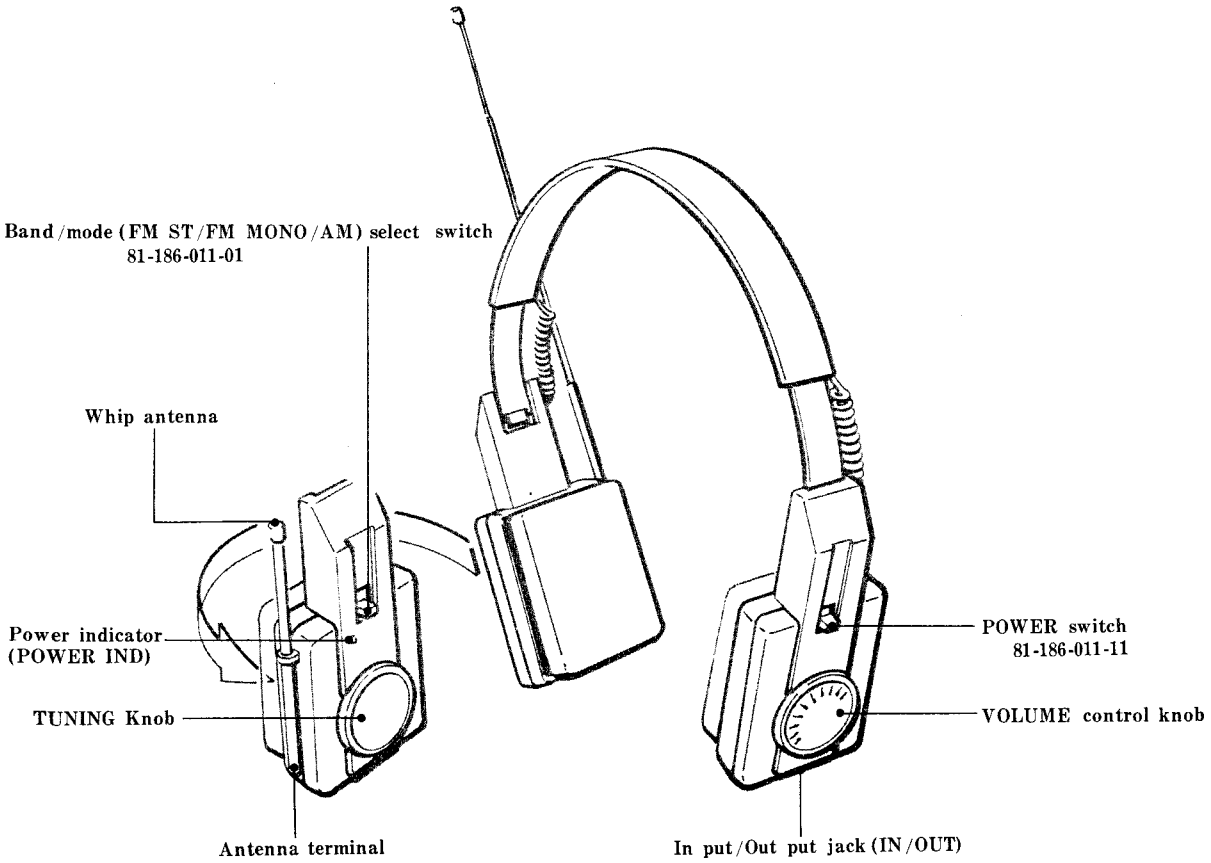
Type: Dynamic
Impedance: 33 Ω
Frequency response: 20 Hz ~ 20,000 Hz
Output sound pressure level:
100 dB/mW (at 1 kHz)
Max. allowable input: 100mW
Rated input: 40mW

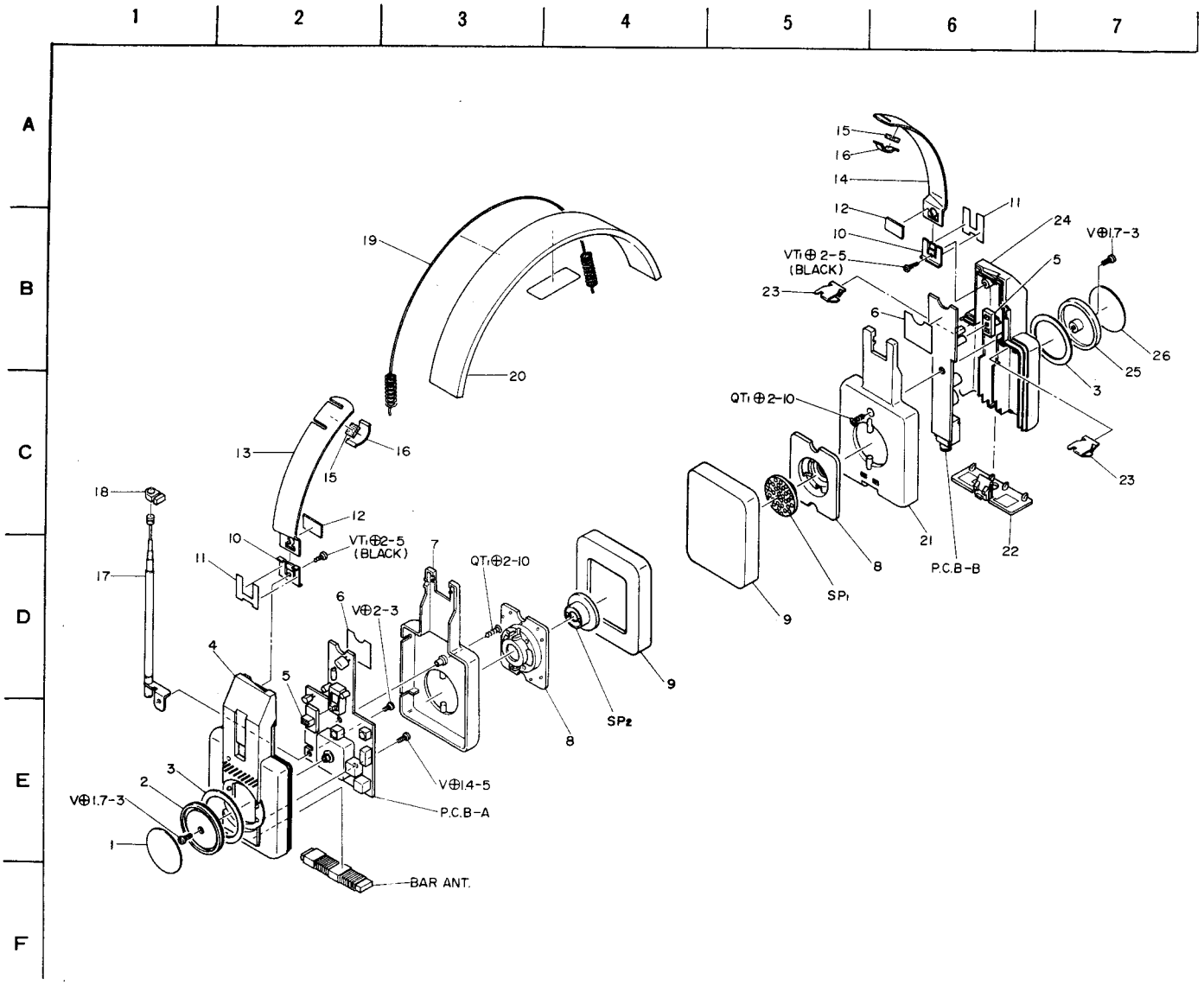
- Specifications and external appearance are subject to change without due to product improvement.

AIWA Co., Ltd. Tokyo Japan

Follow the instructions carefully, which will allow the user to optimise the products performance and give many years of serivce.

1. **No scratch and melting shall be made to covered lead-wires of an a.c. primary circuit including mains leads.**
2. **No illegibility shall be given to the specification plate, the caution labels, the fuse labels and others.**
3. **When, on pattern sides of circuit boards, additional repair-parts have been made up, the parts shall be firmly glued to circuit boards or other components, unless the parts can be attached firmly.**
4. **The following matters shall be maintained as they are, when repairing.**
   1) Soldering of lead-wire ends
   2) Wiring and holding of lead-wires with wire-clips and binders
   3) Materials of lead-wires
      * e.g.; For UL models, lead-wires to be used shall be approved or accepted by the UL.
   4) Location of all kinds of insulators





PARTS LIST

MECHANICAL PARTS

Ref. No.	Part No.	Part No. Changed to	Description	Q'ty
1-1	81-186-023-01		Plate, ϕ26 TUNING	1
1-2	81-186-009-01		Knob, Tuning	1
1-3	81-186-214-01		Washer 15—24.5—0.3	2
1-4	81-186-001-01		Case R	1
1-5	81-186-011-01		Slide knob	2
1-6	81-186-213-01		Insulation sheet	1
1-7	81-186-020-01		Lid RY	1
1-8	81-186-202-01		Holder, Speaker	2
1-9	81-186-015-01		Pad, Ear	2
1-10	81-186-034-01		P-spring, Hinge	2
1-11	81-186-218-01		Mylar sheet, Hinge	2
1-12	81-186-036-01		Rubber sheet 6—13.5—0.5	2
1-13	81-186-007-01		Slider R	1
1-14	81-186-008-01		Slider L	1
1-15	81-186-216-01		Mcushion 5—5—1	2
1-16	81-186-203-01		P-spring, Slide	2
1-17	87-043-063-01		Whip antenna	1
1-18	81-186-012-01		Holder, Antenna	1
1-19	81-186-605-01		Curl stopper, Cord	1
1-20	81-186-019-11		Head band ass'y	1
1-21	81-186-004-01		Lid L	1
1-22	81-186-005-01		Battery room lid	1
1-23	81-646-223-01		Battery terminal plate (—)	2
1-24	81-186-002-01		Case L	1
1-25	81-186-010-01		Knob, Volume	1
1-26	81-186-014-01		Plate, ϕ26 volume	1

ACCESSORIES/PACKAGE

Ref. No.	Part No.	Part No. Changed to	Description	Q'ty	
1	81-186-859-01		Printed indiv., Packing	1	
2	81-186-852-01		Cushion, Printed indiv.	1	
3	81-186-857-01		Cover, Poly-vinyl	1	
4	81-186-904-01		Instructions booklet	1	
5	87-051-135-11		Poly-vinyl sack	1	
6	87-051-136-11		Poly-vinyl sack	1	
7	87-056-009-51		Distributors list (Y, YG model only)	1	
8	87-056-045-01		Guarantee card (YU model only)	1	
9	87-056-050-11		Safety instruction (YU model only)	1	
10	87-056-057-01		Service station list (YU model only)	1	
11	87-056-059-01		Guarantee card (YG model only)	1	
12	81-186-606-01		Wire antenna	1	
13	81-902-001-01		Gonnection cord, CW-217ASK	1	

DISASSEMBLY INSTRUCTIONS

1. REMOVING DRIVER UNIT

1) Take off the ear pad. (See figure-1)

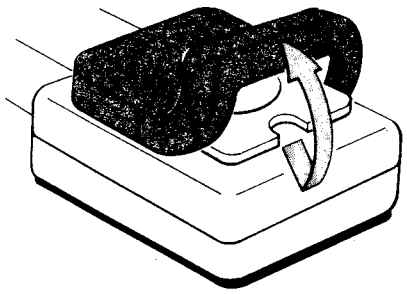


Fig. 1

2) Pull out the speaker holder. (See figuer-2)

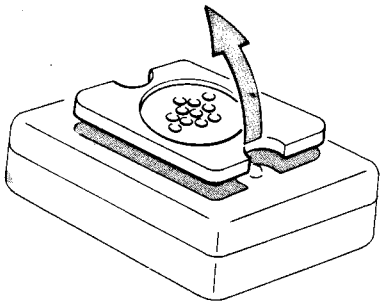


Fig. 2

3) Remove the driver unit leg pushing its rear side. (See figuer-3)

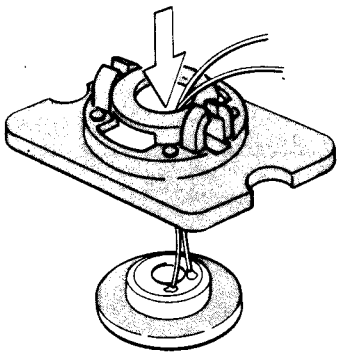


Fig. 3

2. REMOVING LIDS L & R

1) Unfasten the screw. (See figuer-4)

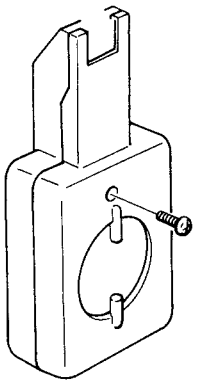


Fig. 4

2) Separate the lid from the case while pushing the ease in the direction of the arrow. (See figure-5)

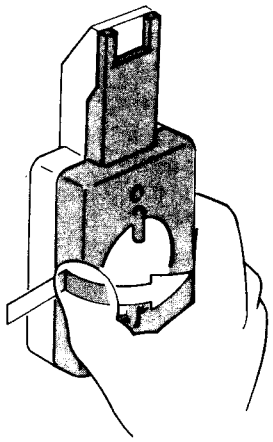


Fig. 5

3. REMOVING CIRCUIT BOARD

1) Unfasten the screw to remove the knob after stripping off the decoration plate for the tuner or the volume. (See figure-6)

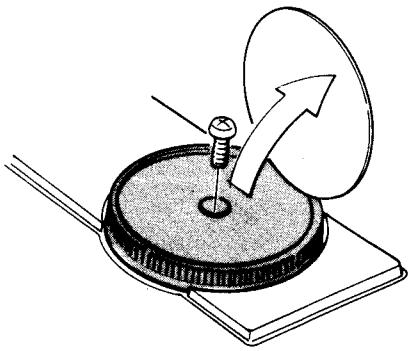


Fig. 6

2) Unfasten the screw.
(Note: only the tuner P.C.B.) (See figuer-7)

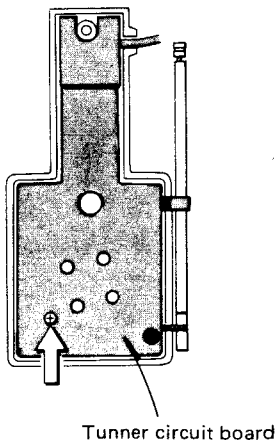
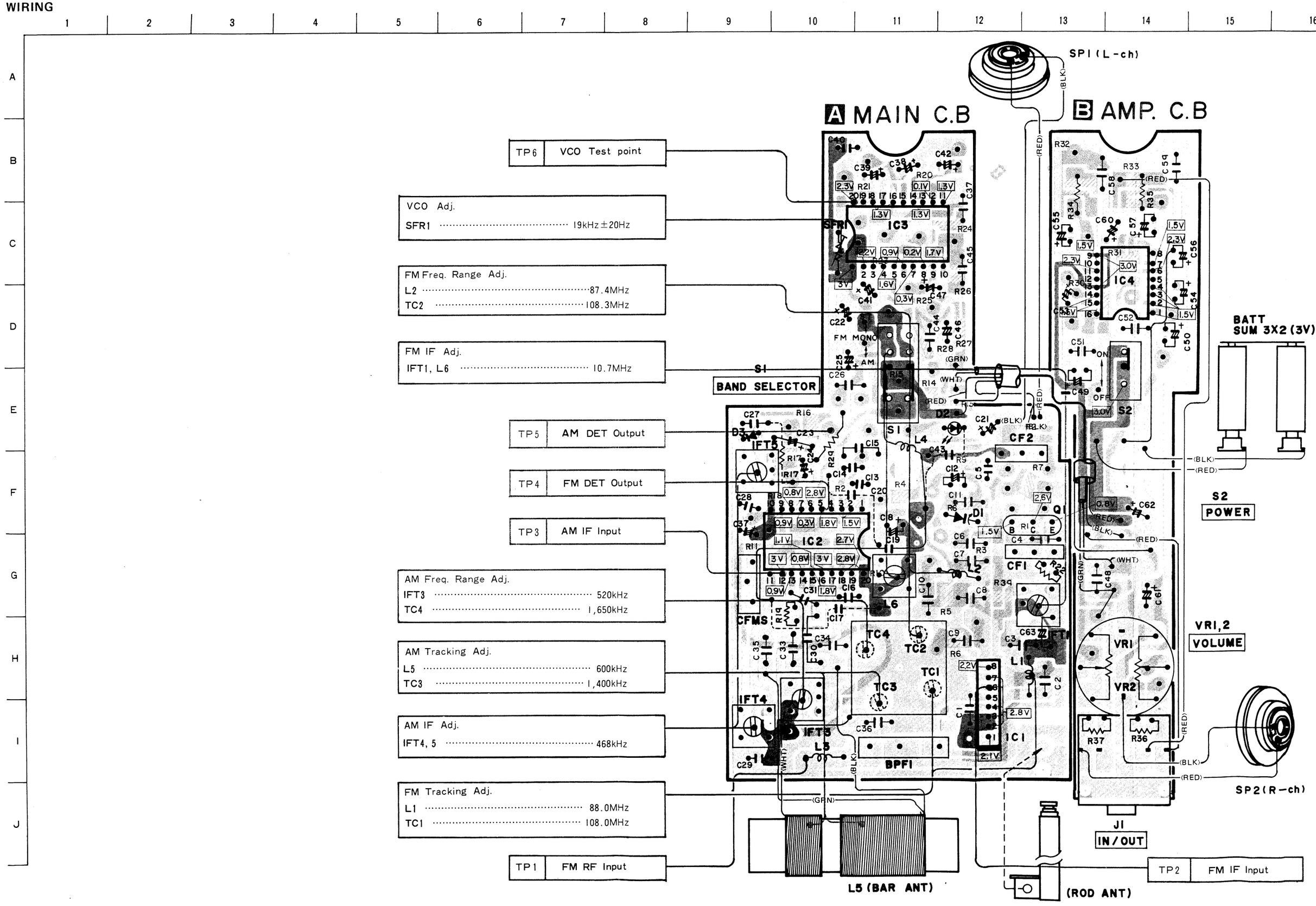


Fig. 7

NOTES (1) ■ B(+) Pattern ▒ Component side pattern ▒ Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC)
But ( ) is with AM reception.

WIRING



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NOTES (1) B(+) Pattern Component side pattern Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC)
But ( ) is with AM reception.

WIRING

TP6	VCO Test point

VCO Adj.
SFR1 ..... 19kHz±20Hz

FM Freq. Range Adj.
L2 ..... 87.4MHz
TC2 ..... 108.3MHz

FM IF Adj.
IFT1, L6 ..... 10.7MHz

TP5	AM DET Output
TP4	FM DET Output
TP3	AM IF Input

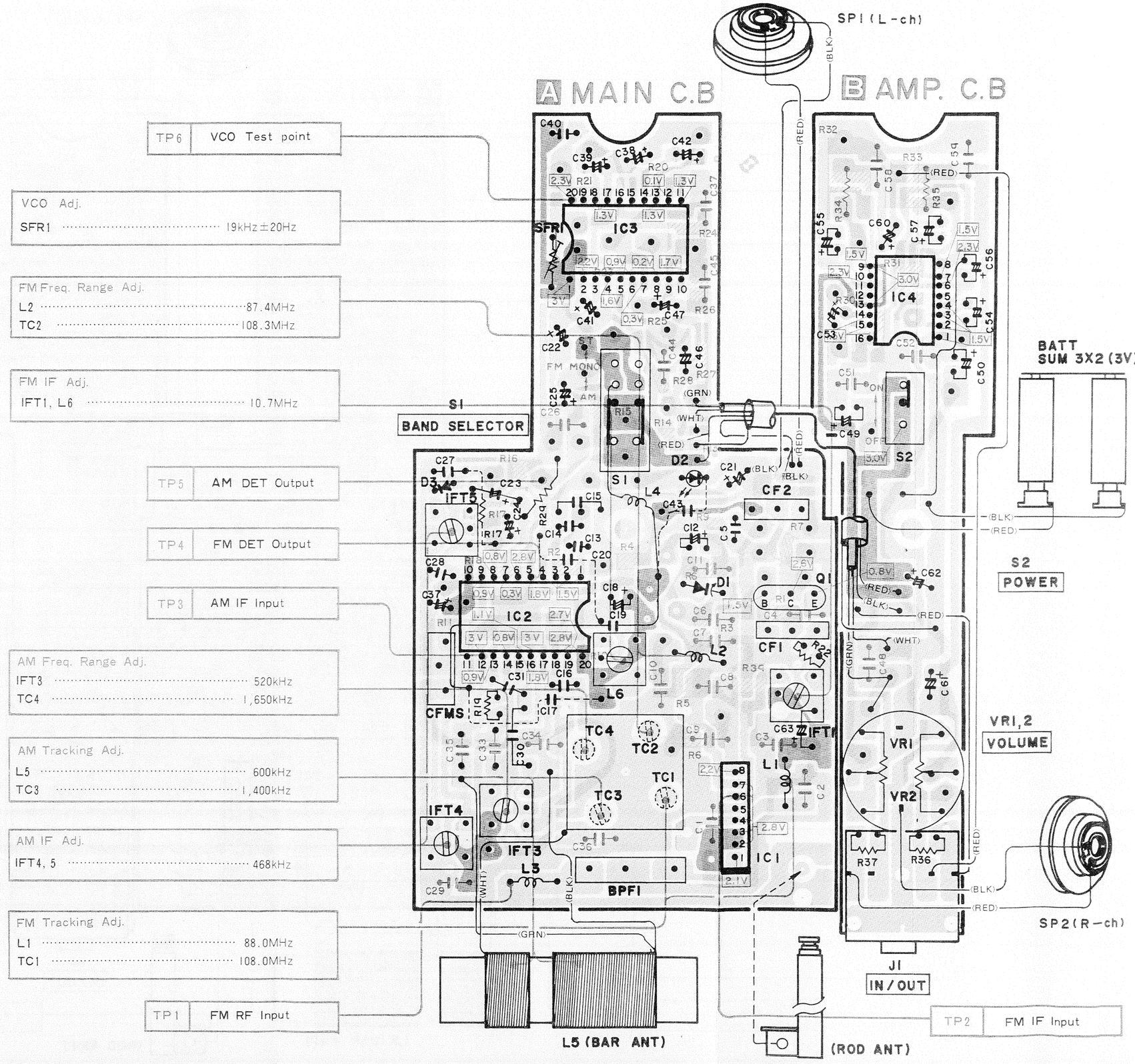
AM Freq. Range Adj.
IFT3 ..... 520kHz
TC4 ..... 1,650kHz

AM Tracking Adj.
L5 ..... 600kHz
TC3 ..... 1,400kHz

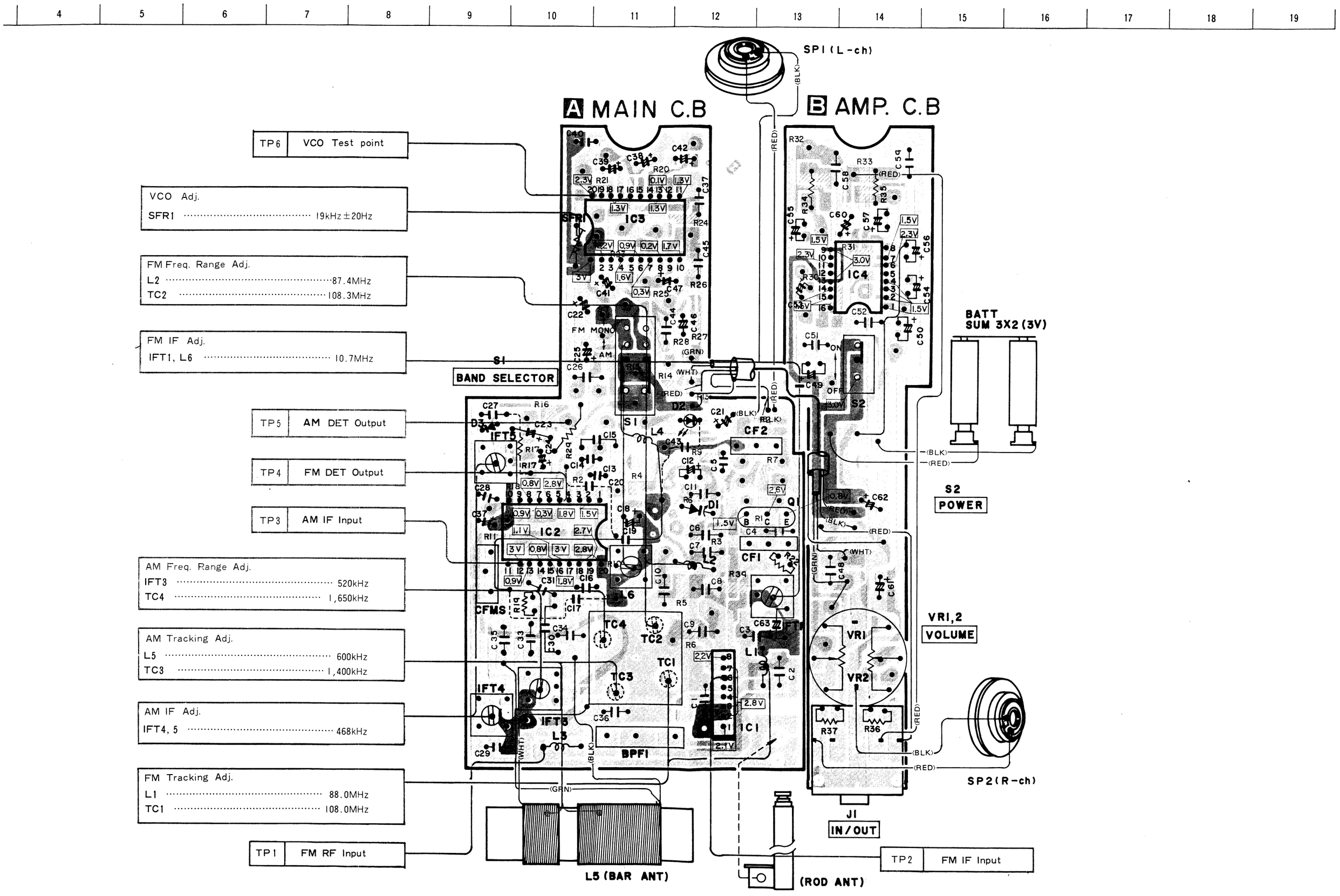
AM IF Adj.
IFT4, 5 ..... 468kHz

FM Tracking Adj.
L1 ..... 88.0MHz
TC1 ..... 108.0MHz

TP1	FM RF Input

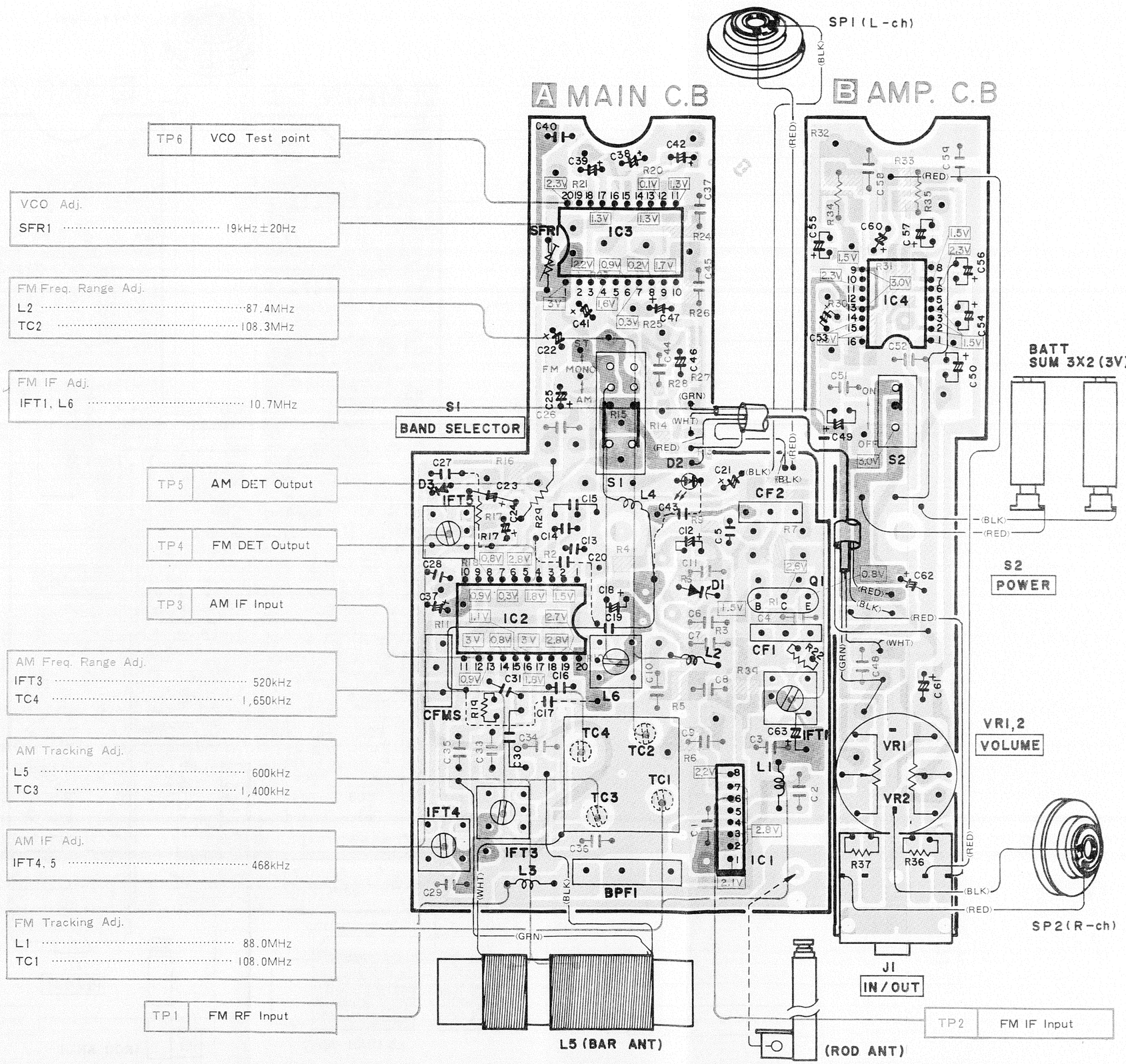


NOTES (1) ■ B(+) Pattern ▒ Component side pattern ▒ Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
But ( ) is with AM reception.



NOTES (1) B(+) Pattern Component side pattern Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
But ( ) is with AM reception.

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19



ELECTRICAL MAIN PARTS LIST

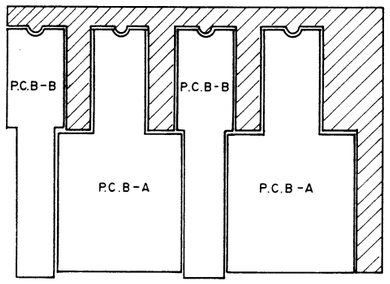
Symbol No.	Part No.	Description
≪MAIN CIRCUIT BOARD SECTION≫		
PCB-A	*	Main circuit board
IC1	87-027-876-01	IC, AN7216
IC2	87-027-748-01	IC, KB4454
IC3	87-027-763-01	IC, TK10280
Q1	89-319-233-01	Transistor, 2SC1923 (O)
D1	87-017-004-01	Diode, SD117
D2	87-027-636-01	LED, TLR226
D3	87-027-783-01	Diode, OA-905 (R)
L1	81-186-607-01	FM antenna coil
L2	81-186-609-01	FM OSC coil
L3	87-007-112-01	Coil, 0.6μH
L4	87-003-051-01	Choke coil, 440μH
L6	82-590-603-01	Quad coil, DET 5SH
L7	87-007-117-01	AM OSC coil
VC1~4 TC1~4	87-011-134-01	PVC 40P
BPF1	87-030-087-01	Band pass filter
IFT1	87-008-248-01	FM IFT
IFT2	87-008-249-01	AM IFT
IFT3	87-008-250-01	AM IFT (DET)
CF1,2	87-008-229-01	Ceramic filter MA5U
CFMS	87-008-251-01	Ceramic filter CFMS468
S1	87-031-724-01	Slide switch (BAND)
SFR1	87-021-677-01	Semi-fixed resistor, 10kΩ-B
		< **Capacitor** >
C46,47	87-015-692-01	0.22μF 50V Electrolytic
C12,23	87-015-695-01	1μF 50V Electrolytic
C22,41	87-015-681-01	10μF 16V Electrolytic
C39,44	87-015-376-01	1μF 10V Tantalum
C38	87-015-399-01	3.3μF 6.3V Tantalum
C21	87-002-457-17	47μF 6.3V Tantalum
C63	87-015-301-01	100μF 3.15V Tantalum
C40	87-014-057-01	1000pF PP
C20	87-018-033-01	120pF Ceramic
C31	87-018-044-01	0.001μF Ceramic
C5,13,14, 15,19,27, 28,30	87-018-047-01	0.01μF 16V Ceramic
C8,9,36	87-015-746-02	5pF Chip capacitor
C6	87-015-748-02	7pF Chip capacitor
C34	87-015-751-02	10pF Chip capacitor
C2	87-015-794-02	18pF Chip capacitor
C7	87-015-756-01	22pF Chip capacitor
C10	87-015-629-02	0.0022μF Chip capacitor
C1,3	87-015-818-02	0.0047μF Chip capacitor
C4,11,26, 29,33,35	87-015-819-02	0.01μF Chip capacitor
C37	87-015-822-02	0.022μF Chip capacitor
≪AMP CIRCUIT BOARD SECTION≫		
PCB-B	*	AMP circuit board
VR1,2	82-641-603-01	Volume, 20kΩ-A (VOLUME)
J1	87-049-066-01	Jack, 3.5φ (IN/OUT)
S2	87-031-723-01	Slide switch (POWER)
		< **Capacitors** >
C49,50	87-015-695-01	1μF 50V Electrolytic
C56	87-015-696-01	2.2μF 50V Electrolytic
C53,54,55, 57	87-015-674-01	22μF 6.3V Electrolytic
C60,61,62	87-015-908-01	220μF 4V Electrolytic
C51,52	87-015-629-01	0.0022μF Chip capacitor
C58,59	87-015-785-02	0.1μF Chip capacitor

Symbol No.	Part No.	Description
≪MISCELLANEOUS≫		
L5	81-186-601-01	Bar antenna coil

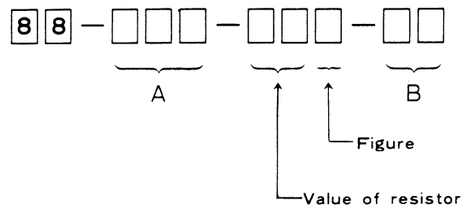
Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

Combination circuit board 81-186-602-01



Chip resistor parts cord



Chip resistor

Power value	Type	A	B
1/8W	Chip in magazine	129	01
	Chip within tape	129	08

Example of chip resistor

560Ω	88—129—561—01
10kΩ	88—129—103—01

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Symbol No.	Part No.	Description
≪MISCELLANEOUS≫		
L5	81-186-601-01	Bar antenna coil

Note; Combination Circuit Board

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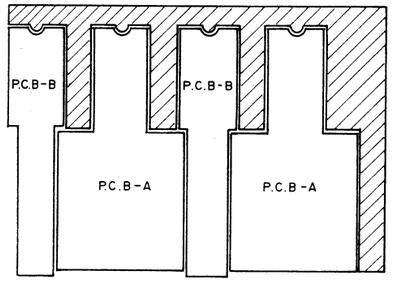
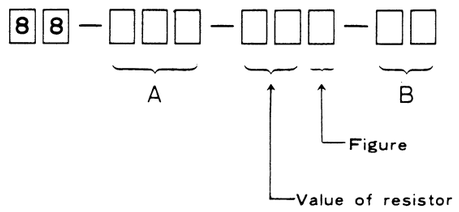
Combination circuit board 81-186-602-01



Chip resistor parts cord



Chip resistor

Power value	Type	A	B
1/8W	Chip in magazine	129	01
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Example of chip resistor

560Ω	88—129—561—01
10kΩ	88—129—103—01

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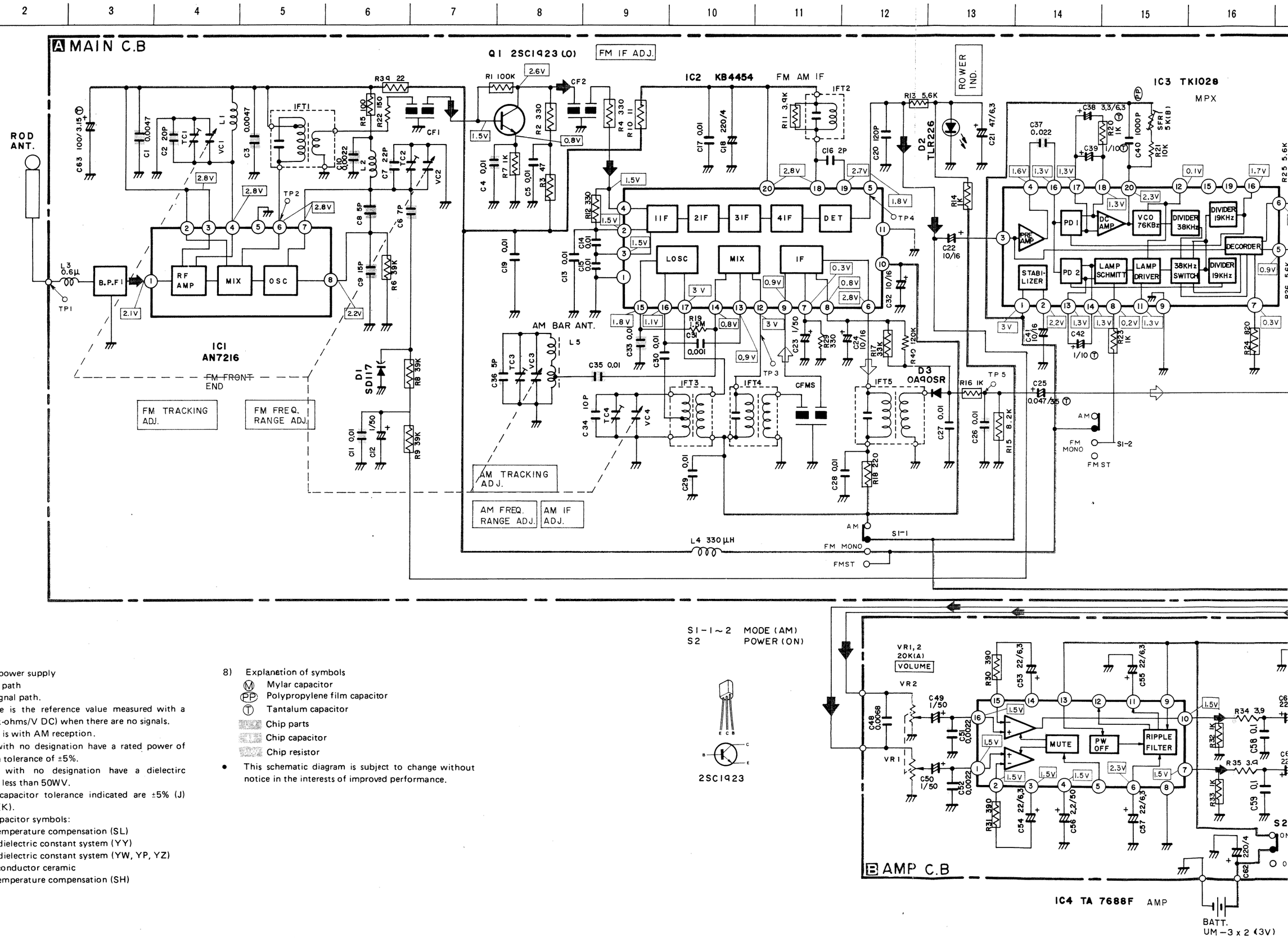
SCHEMATIC DIAGRAM



SI-1~2 MODE (AM)
S2 POWER (ON)

2SC1923

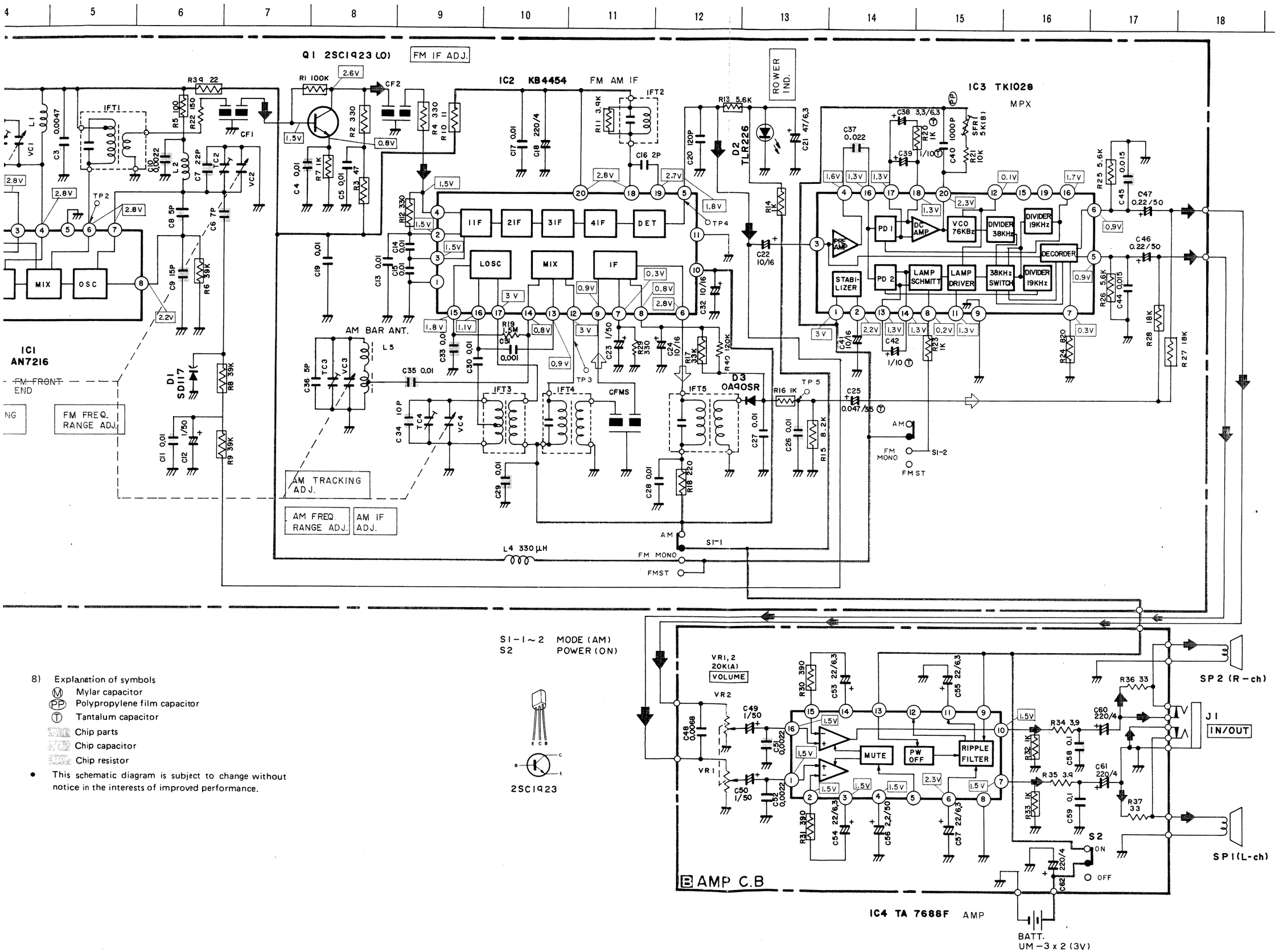
IC4 TA 7688F AMP

BATT.
UM-3 x 2 (3V)

NOTES:

1) B (+) power supply
2) Signal path
   AM signal path.
3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. But ( ) is with AM reception.
4) Resistors with no designation have a rated power of 1/8W and a tolerance of ±5%.
5) Capacitors with no designation have a dielectirc strneght of less than 50WV.
6) The only capacitor tolerance indicated are ±5% (J) and ±10% (K).
7) Ceramic capacitor symbols:
   - For temperature compensation (SL)
   - High dielectric constant system (YY)
   - High dielectric constant system (YW, YP, YZ)
   - Semiconductor ceramic
   - For temperature compensation (SH)
8) Explanetion of symbols
   - (M) Mylar capacitor
   - (PP) Polypropylene film capacitor
   - (T) Tantalum capacitor
   - Chip parts
   - Chip capacitor
   - Chip resistor

- This schematic diagram is subject to change without notice in the interests of improved performance.



S1-1~2 MODE (AM)
S2 POWER (ON)

2SC1923

IC4 TA 7688F AMP

BATT.
UM-3 x 2 (3V)

8) Explanation of symbols
- (M) Mylar capacitor
- (PP) Polypropylene film capacitor
- (T) Tantalum capacitor
- Chip parts
- Chip capacitor
- Chip resistor

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